

**NSERC
CRSNG
PRAIRIES**

Annual Review 2006-2007



**Natural Sciences and Engineering
Research Council of Canada**

Conseil de recherches en sciences
naturelles et en génie du Canada

Canada



NSERC Eligible Institutions

ALBERTA

Universities

Athabasca University

Concordia University College

Alberta

The King's University College

University of Lethbridge

University of Alberta

University of Calgary

Colleges

Akland College

Mount Royal College

Red Deer College

Southern Alberta Institute of Technology

MANITOBA

Universities

Brandon University

University of Manitoba

University of Winnipeg

Colleges

Red River College of Applied Science and Technology

SKSASKATCHEWAN

Universities

University of Regina

University of Saskatchewan

Advisory Committee Members



Some of the members of the NSERC-Prairies Advisory Committee at the 2007 Annual Meeting in Saskatchewan. From left to right: V. Sullivan, J. Graham, J. Madder, T. Porter, G. Levesque, D. Fitzpatrick, D. Wilkie, and E. Barker.

Chair:

Dennis Fitzpatrick
Vice-President (Research)
University of Lethbridge

Secretary:

Guy Levesque
Manager
NSERC-Prairies

Members:

Elizabeth Barker
MSc Student
University of Regina

John Graham
Services Executive
IBM Canada Ltd.

Ray Hoemsen
Director, Applied Research and
Commercialization
Red River College of Applied Arts,
Science and Technology

Gary Kachanoski
Professor,
Department of Renewable
Resources
University of Alberta

Jim Madder
Executive Vice President
Academic
Red Deer College

Tom Porter
Research Facilitator
University of Saskatchewan

Vivian Sullivan
Regional Director
Industrial Research Assistance
Program West

Debbie Wilkie
Assistant Deputy Minister –
Industry Development
Saskatchewan Industry and
Resources
Government of Saskatchewan

Ex-Officio Members:

Jillian M. Burak
Professor and Senior Research
Officer
University of Alberta

Joanne Keselman
Vice-President (Research)
University of Manitoba

Murray McLaughlin
Director of Business Development
Canadian Light Source, Inc.

Maurice Moloney
Chief Scientific Officer
SemBioSys Genetics Inc.

NSERC Reps

University of Alberta

Susan E. Jensen
Faculty of Science, Department of
Biological Sciences
jensen@ualberta.ca

Athabasca University

Martin Connors
Centre for Science, Departments of
Mathematics, Physics and
Astronomy
martinc@athabasca.ca

Brandon University

Austin F. Gulliver
Dean of Science
gulliver@brandonu.ca

University of Calgary

Janet L. Ronsky
Faculties of Engineering and Kinesiology
jronsksy@ucalgary.ca

The King's University College

Hank Bestman
Department of Biology
hank.bestman@kingsu.ca

University of Lethbridge

Dennis Fitzpatrick
Vice-President (Research)
dennis.fitzpatrick@uleth.ca

University of Manitoba

Digvir Jayas
Associate Vice-President (Research)
digvir.jayas@umanitoba.ca

University of Regina

Douglas R. Farenick
Faculty of Science, Department of
Mathematics and Statistics
douglas.farenick@uregina.ca

University of Saskatchewan

Jim Basinger
Associate Dean of Science
jim.basinger@usask.ca

University of Winnipeg

Randy Kobes
Acting Associate Dean of Science
Faculty of Science, Department of Physics
r.kobes@uwinipeg.ca



From the Manager's Desk



**Guy Levesque, Manager,
NSERC-Prairies.**

Fall 2007

Dear Colleagues,

With a second year now under our belts, the NSERC-Prairies office has successfully delivered on the first part of our three-part mandate of **Presence, Access to Programs, and Promotion**. Having crisscrossed the region multiple times over the past year, engaging our many stakeholders, NSERC-Prairies staff has been busy attending, promoting, supporting and organizing events and initiatives. In my travels over the past six months, I kept hearing how much our office has been visible, responsive and helpful. We've started to make a difference in our region. We've started to understand the different needs, expectations and challenges of our many stakeholders. We've started connecting people and organizations to help them solve their problems and achieve their goals. Yet, our job has just begun . . .

I invite you to leaf through our *2006-07 Annual Review* to read about some of the wonderful and exciting events and happenings in the region over the past year. Appropriately, the honeycomb background reflects many of the qualities and values we share at NSERC-Prairies: hard work, collaboration, and community. It also symbolizes our efforts to connect people and bring stakeholders together. Indeed, you'll find the Prairie region was buzzing with activity over the summer, with the Canadian Association of Physicists, the Canadian Society for Chemistry and the Canadian Mathematical Society all holding their annual conference and general meeting in our region. As well, it marked a first for Canada, and North America, when Saskatoon played host to the International Biology Olympiad this past July.

The Annual Review also features many of the individuals and groups who received special prizes and awards over the past year. In addition, we've also included a distilled version of our *2006-07 State of the Region Report*. We intend to disseminate that report broadly over the coming weeks.

Over the last six months, with your help and the support of our Advisory Committee, we've been busy developing our plans and activities for 2007-08 and beyond; identifying and acting on initiatives and value-added services where our office can play a leadership role. Whether it's bringing researchers together from across the region through our regional networking workshops, elaborating our Prairies stakeholder map, stimulating new initiatives and projects through our Discretionary Grant Fund, or connecting students and companies to capitalize on NSERC's industrial scholarships and fellowships, our efforts this year will focus on increasing access to programs and showcasing our research and innovation successes.

As you will see in the pages that follow, we are hard at work trying to make a difference. As our understanding of the region and of our stakeholders grows, our ability to collaborate effectively with you also grows. I look forward to meeting many of you over the next year as I travel across the region. We would love to hear your ideas and suggestions on how the NSERC-Prairies office can help you.

Yours in collaboration,

**Guy Levesque
Manager, NSERC-Prairies**





NSERC Eligible Institutions

ALBERTA

Universities

Athabasca University

Concordia University College of Alberta

The King's University College,

University of Lethbridge

University of Alberta

University of Calgary

Colleges

Lakeland College

Mount Royal College

Olds College

Red Deer College

Southern Alberta Institute of Technology

MANITOBA

Universities

Brandon University

University of Manitoba

University of Winnipeg

Colleges

Red River College of Applied Arts Science and Technology

SASKATCHEWAN

Universities

University of Regina

University of Saskatchewan

NSERC-PRAIRIES ANNUAL REVIEW 2006-2007

Advisory Committee Members



Some of the members of the NSERC-Prairies Advisory Committee at the 2007 Annual Meeting in Saskatchewan. From left to right: V. Sullivan, J. Graham, J. Madder, T. Porter, G. Levesque, D. Fitzpatrick, D. Wilkie, and E. Barker.

Chair:

Dennis Fitzpatrick
Vice-President (Research)
[University of Lethbridge](http://www.uleth.ca)

Gary Kachanoski

Professor,
Department of Renewable
Resources
[University of Alberta](http://www.ualberta.ca)

Ex-Officio Members:

Jillian M. Burak
Professor and Senior Research
Officer
[University of Alberta](http://www.ualberta.ca)

Secretary:

Guy Levesque
Manager
[NSERC-Prairies](http://www.nserc-prairies.ca)

Jim Madder
Executive Vice President
Academic
[Red Deer College](http://www.rdc.ca)

Joanne Keselman
Vice-President (Research)
[University of Manitoba](http://www.umanitoba.ca)

Members:

Elizabeth Barker
MSc Student
[University of Regina](http://www.universityregina.ca)

Tom Porter
Research Facilitator
[University of Saskatchewan](http://www.usask.ca)

Murray McLaughlin
Director of Business Development
[Canadian Light Source, Inc.](http://www.canadianlightsource.ca)

John Graham
Services Executive
[IBM Canada Ltd.](http://www.ibmcanada.com)

Vivian Sullivan
Regional Director
[Industrial Research Assistance
Program West](http://www.ira.ca)

Maurice Moloney
Chief Scientific Officer
[SemBioSys Genetics Inc.](http://www.semiosys.ca)

Ray Hoemsen
Director, Applied Research and
Commercialization
[Red River College of Applied Arts,
Science and Technology](http://www.rcc.ca)

Debbie Wilkie
Assistant Deputy Minister –
Industry Development
Saskatchewan Industry and
Resources
[Government of Saskatchewan](http://www.saskatchewan.ca)

NSERC Reps

University of Alberta

Susan E. Jensen
Faculty of Science, Department of
Biological Sciences
jensen@ualberta.ca

University of Lethbridge

Dennis Fitzpatrick
Vice-President (Research)
dennis.fitzpatrick@uleth.ca

Athabasca University

Martin Connors
Centre for Science, Departments of
Mathematics, Physics and
Astronomy
martinc@athabascau.ca

University of Manitoba

Digvir Jayas
Associate Vice-President (Research)
digvir.jayas@umanitoba.ca

Brandon University

Austin F. Gulliver
Dean of Science
gulliver@brandonu.ca

University of Regina

Douglas R. Farenick
Faculty of Science, Department of
Mathematics and Statistics
douglas.farenick@uregina.ca

University of Calgary

Janet L. Ronsky
Faculties of Engineering and Kinesiology
jlronsksy@ucalgary.ca

University of Saskatchewan

Jim Basinger
Associate Dean of Science
jim.basinger@usask.ca

The King's University College

Hank Bestman
Department of Biology
hank.bestman@kingsu.ca

University of Winnipeg

Randy Kobes
Acting Associate Dean of Science
Faculty of Science, Department of Physics
r.kobes@uwinipeg.ca



From the Manager's Desk



**Guy Levesque, Manager,
NSERC-Prairies.**

Fall 2007

Dear Colleagues,

With a second year now under our belts, the NSERC-Prairies office has successfully delivered on the first part of our three-part mandate of **Presence, Access to Programs, and Promotion**. Having crisscrossed the region multiple times over the past year, engaging our many stakeholders, NSERC-Prairies staff has been busy attending, promoting, supporting and organizing events and initiatives. In my travels over the past six months, I kept hearing how much our office has been visible, responsive and helpful. We've started to make a difference in our region. We've started to understand the different needs, expectations and challenges of our many stakeholders. We've started connecting people and organizations to help them solve their problems and achieve their goals. Yet, our job has just begun . . .

I invite you to leaf through our *2006-07 Annual Review* to read about some of the wonderful and exciting events and happenings in the region over the past year. Appropriately, the honeycomb background reflects many of the qualities and values we share at NSERC-Prairies: hard work, collaboration, and community. It also symbolizes our efforts to connect people and bring stakeholders together. Indeed, you'll find the Prairie region was buzzing with activity over the summer, with the Canadian Association of Physicists, the Canadian Society for Chemistry and the Canadian Mathematical Society all holding their annual conference and general meeting in our region. As well, it marked a first for Canada, and North America, when Saskatoon played host to the International Biology Olympiad this past July.

The Annual Review also features many of the individuals and groups who received special prizes and awards over the past year. In addition, we've also included a distilled version of our *2006-07 State of the Region Report*. We intend to disseminate that report broadly over the coming weeks.

Over the last six months, with your help and the support of our Advisory Committee, we've been busy developing our plans and activities for 2007-08 and beyond; identifying and acting on initiatives and value-added services where our office can play a leadership role. Whether it's bringing researchers together from across the region through our regional networking workshops, elaborating our Prairies stakeholder map, stimulating new initiatives and projects through our Discretionary Grant Fund, or connecting students and companies to capitalize on NSERC's industrial scholarships and fellowships, our efforts this year will focus on increasing access to programs and showcasing our research and innovation successes.

As you will see in the pages that follow, we are hard at work trying to make a difference. As our understanding of the region and of our stakeholders grows, our ability to collaborate effectively with you also grows. I look forward to meeting many of you over the next year as I travel across the region. We would love to hear your ideas and suggestions on how the NSERC-Prairies office can help you.

Yours in collaboration,

**Guy Levesque
Manager, NSERC-Prairies**





Discovery Grants – Discovery Accelerator Supplements

The Discovery Accelerator Supplements (DAS) provide substantial and timely resources to a small group of outstanding researchers who have a well-established research program and who are at a key point in their careers at which they can make, or capitalize on, a significant breakthrough, but who are being held back by insufficient funds. The supplements will be valued at \$120,000 over three years and will provide recipients with additional resources to compete with the best in the world. The supplements may be used to expand the recipient's research group (i.e., students, postdoctoral fellows, technicians), to purchase or to have access to specialized equipment, or for other initiatives/resources that would maximize the impact of their research program.

Thus, these are some of our innovation and breakthrough stars...

Grant Selection Committee 4



Alidad Amirfazli, Mechanical Engineering, University of Alberta
"Surface Engineering Through Chemical and Topographical Manipulation and Drop Dynamics on Such Surfaces"



Biao Huang, Chemical and Materials Engineering, University of Alberta
"Dynamic Estimation of Continuum and Noncontinuum States for Process Control Monitoring"

Grant Selection Committee 6



Clayton Deutsch, Civil and Environmental Engineering, University of Calgary
"Mineral Resource Uncertainty Modeling"

Grant Selection Committee 335



Aniruddha Gole, Electrical and Computer Engineering, University of Manitoba
"Electromagnetic Transients Simulation Assisted Design of Power Systems"

Grant Selection Committee 8



Thomas Stachel, Earth and Atmospheric Sciences, University of Alberta
"Diamond Formation in the Earth's Mantle"

Grant Selection Committee 1012



Stephen Harvey, Physiology, University of Alberta
"Growth Hormone as an Autocrine/Paracrine Factor in Chick Embryogenesis: A Retinal Model"

Grant Selection Committee 9



Steven Siciliano, Soil Science, University of Saskatchewan
"Contaminant Transformation and Toxicity in Terrestrial Arctic Ecosystems"

Grant Selection Committee 1013



Richard Wilson, Physiology and Biophysics, University of Calgary
"Neuronal Basis of Bimodal Ventilation in Low Vertebrates"

Grant Selection Committee 18



Edward McCauley, Biological Sciences, University of Calgary
"Dynamics and Stability of Freshwater Resource-Consumer Systems: Testing Mechanisms from Structured Theory"

Grant Selection Committee 1054



Warren Finlay, Mechanical Engineering, University of Alberta
"Aerosol Mechanics in Replicas of Extrathoracic Airways of Infants and Children"

Grant Selection Committee 330



Philip Fong, Computer Science, University of Regina
"Programming Abstractions for Access Control: Capability, Delegation, Obligation"



Research Partnership Program Working for Industry and Academia

NSERC's Idea to Innovation (I2I) Program made several vital connections to researchers this year as workshops on innovation were given across the Prairies. Funding agencies, technology transfer offices and researchers were in attendance. Winnipeg, Saskatoon, Regina, Calgary and Edmonton each hosted one of the workshop sessions.

Getting new technology through necessary testing, debugging and improvement phases can be a long and expensive process for researchers and industry alike. The I2I grants aim to make the process go a little bit easier, and the Innovation Workshops have been designed to let researchers know about the best ways to take advantage of those grants and the many other opportunities available to them.

In addition to NSERC-Prairies, the National Research Council Canada was on hand at the workshops to discuss

their Industrial Research Assistance Program (IRAP), which provides assistance in technical, business and financial matters to small and mid-sized Canadian companies. The Canadian Intellectual Property Office participated, keeping researchers informed of the copyright, patent and trademark regulations vital to success in technology transfer. The Scientific Research and Experimental Development (SR&ED) program was also represented. SR&ED is a program administered by the Canada Revenue Agency that helps Canadian businesses to conduct research and development on new products.

The Innovation Workshops give leaders in discovery the opportunity to find out more of the "nuts and bolts" of technology transfer, what they need to be prepared for and what options are open to them.

Keeping Our Researchers and Students Informed

NSERC-Prairies supports research in the natural sciences and engineering – both short-term projects and entire research programs. One of the ways NSERC supports large research initiatives is through Discovery Grants. Because it is vital that Prairies researchers stay abreast of valuable funding opportunities such as these, NSERC-Prairies participated in Discovery Grant presentations for Lakehead University, University of Winnipeg, University of Saskatchewan, University of Calgary, University of Alberta and Athabasca University. These information sessions helped to keep academics in the region informed about the opportunities open to them.

Another way to keep Prairies researchers on top of helpful programs has been the Strategic Grants presentations held by NSERC and NSERC-Prairies. Strategic Grants are available to researchers working on projects that fall within NSERC's targeted areas. Focus on these areas helps to maintain the leadership position Canada already has by bolstering knowledge generation, increasing the number of qualified Canadians in each area and encouraging technology transfer to Canada-based industry.

Students, researchers and administrators were invited to the NSERC Scholarships

and Fellowships sessions to learn about funding opportunities available to them in the coming academic year. As well, NSERC-Prairies hosted meetings with individual researchers to discuss how to apply these programs to specific projects.

The Strategic Grants tour took place over two weeks and covered four provinces, highlighting the effects Strategic Grants have had in the region and developing new connections.

Prairies Rock!

Industry and research in Canada recognize the impact that the earth sciences have on Canada's future. The Prairies are full of resources valuable to Canada and the world, including gold, diamonds, uranium, potash, nickel and copper.

With a thriving mining sector, and significant mineral exploration activities across the Prairies, university researchers from northwestern Ontario, Manitoba and Saskatchewan convened on April 16, 2007, at the NRC's Institute for Biodiagnostics in Winnipeg to discuss issues of common interest and opportunities for closer collaboration.

Five Prairie-based universities gave presentations on the state of their geology programs. These sessions offered all participants a chance to connect with fellow researchers in order to find partners for novel initiatives and to explore areas of overlapping interest. These partnerships and overlapping areas of interest are helping form the basis for building a Strategic Research Network. The meeting was a huge success and the group is planning to meet again in Saskatoon in November, inviting an even larger number of participants.



InnoWest 2006: Strengthening Economic Diversity



One of the goals The Centre for Innovation Studies (THECIS) is dedicated to is the diversification of Canadian industry to maintain a strong economy.

This goal formed the backdrop behind THECIS hosting the InnoWest 2006 conference in Edmonton.

InnoWest 2006 focused participants on resources that make Canada's economy strong – energy, agriculture and life sciences – but also delved into the essential areas of public policy and the

challenges encountered by small and medium-sized Canadian technology firms.

Organizational methods used around the world for enhancing technology transfer from research to industry constituted one of the hot topics of the day, and CEOs of successful Canadian technology companies shared their experiences in the field.

As part of the conference, NSERC-Prairies introduced its office to InnoWest participants at the evening reception. The conference was a success for all participants. NSERC-Prairies plans to attend next year's conference in Calgary.

Prairie Universities Come Together to Discuss Food and Bioproduct Opportunities

The University of Manitoba held the Quality Foods and Novel Bioproducts Workshop this year from March 21 to 22. NSERC recently identified this topic as a "target area" to which more research and resources should be devoted. With continued development in this area, it is hoped that new innovations and technologies will help Canada to increase the quality and safety of domestic food supplies as well as boost revenue from exporting foods.

All researchers in attendance were selected by their respective universities for their leadership in the field. Participants had the chance to network with their fellow researchers and university

personnel at a dinner the first evening of the workshop, and the next day heard from each of the universities. Also on the second day, participants split into breakout sessions to discuss key themes in their topic areas and identify individuals who could serve as team leaders for multi-institutional research.

Regional networking workshops are important to innovation in Canada, as they allow for connections to be built among academics that strengthen Canada's research abilities. NSERC-Prairies was proud to be a part of this unique opportunity, and hopes the Quality Foods and Novel Bioproducts Workshop will be the first of many such networking opportunities.

The Prairie Provinces are a Hub of Activity!

The Prairie Provinces were major centres of science activity this year. The NSERC-Prairies office was kept busy actively supporting and participating in ventures across the region, including several national and international conferences.

Winnipeg hosted the 2007 Canadian Society for Chemistry's annual conference. From May 26 to 30, this conference – the 90th in the series – brought together graduate and undergraduate researchers from across the country as well as speakers from around the world. Students from Prairie province universities brought home numerous prizes in nearly every award division.

Winnipeg was also the site of the Canadian Mathematical Society's 2007 conference, held May 31 to June 3. This year, the Society teamed up with Mathematics of Information Technology and Complex Systems to host a joint conference. Students had the chance not only to participate in poster and presentation sessions but also to learn about the industrial internship programs available to them.

The Canadian Association of Physicists held their 2007 Congress at the University of Saskatchewan from June 17 to 20. Physicists from Canada and around the world gathered to share their research and work together on new ways to promote physics education.

July 22 to 24 saw the Canadian Design Engineers Network and the Canadian Congress on Engineering Education gathered together for the first time at the University of Manitoba. The conference focused on new developments in the design engineering field and applications of new technology and new teaching methods for engineering education.



Ron Britton, Dean of Design Engineering at the University of Manitoba, welcomes CDEN/C2E2 attendees.



MITACS and NSERC-Prairies Open Doors for Young Scientists

Finding ways to slow the spread of HIV in Africa, building innovative mathematical models to assess investment risk and modeling automated control systems for alternative energy production are only a few of the projects that young researchers presented at a conference held by the Canadian Mathematical Society (CMS) and the Mathematics of Information Technology and Complex Systems, also known as MITACS. The conference, hosted May 31 to June 3 by the University of Manitoba in Winnipeg, was the largest gathering of mathematicians ever in Canada.

"MITACS is about math, and how we can use it to enhance lives," said Heather Hunter, a speaker at the event's opening and the senior research advisor for the Manitoba Education Research Network. "The conference is an opportunity to learn more about what's happening in mathematics research."

In keeping with this drive, high school students were invited to attend the conference and learn about what mathematicians do and what careers in academia and industry are open to them. Three students from Winnipeg's Tech Voc High School were among those at the conference exploring their options for further studies in mathematics. "Our teacher asked us to come," Teal Mofynski commented. "But math is great. I might also be able to find out what some of the careers in math are." The sentiment was echoed by her classmate Lauren Ellison, "I want to look into math as a field of study. I'd like to increase my knowledge of what's out there." Their friend Shawn Kozarchuk was there to learn more about "understanding concepts and how things are moving in math."

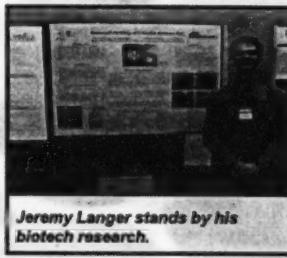
"I think this area of research could play a huge role in Canada's future."

Jeremy Langer

Among the distinguished speakers was University of Saskatchewan Computer Science professor and Cameco-NSERC Chair of Women in Science and Engineering Julita Vassileva. Julita encouraged the audience, in particular female high school students, to look to careers in mathematics. "Math



Julita Vassileva, NSERC/Cameco Chair for Women in Science and Engineering - Prairies, speaks at the MITACS conference.



Jeremy Langer stands by his biotech research.

has never suffered from a lack of women," she said.

The researchers themselves were happy to be there. Jeremy Langer from the University of Manitoba was at the CMS-MITACS conference to showcase his

work in alternative fuels. During his MITACS internship, Jeremy developed a software model of the gasification process used to convert biomass – anything from household compost to straw to dead trees – into combustible fuel. "I think this area of research could play a huge role in Canada's future," Jeremy said.

During the conference, NSERC-Prairies and MITACS hosted an Internship Prairie Showcase breakfast to demonstrate the effect of the MITACS internship programs and NSERC Industrial Postgraduate Scholarships in Western Canada. The breakfast session was a chance for industry to see what applied work was possible through partnerships with researchers and students.

"Canada is one of the top five countries in terms of research output," said Arvind Gupta, Scientific Director and CEO of MITACS and Simon Fraser University professor. "But we lag near the bottom in industry R&D." Arvind hopes to change this with the help of MITACS internships.

"Canada is one of the top five countries in terms of research output, but we lag near the bottom in industry R&D."

Arvind Gupta

One success story showcased at the breakfast was that of Rebeccah Marsh, former MITACS intern and PhD in Physics at the University of Alberta. During her MITACS internship with Calgary's Computer Modelling Group, Inc., Rebeccah built a software model of a human liver for use in virtual drug testing. In only a four-month internship, Rebeccah completed the software model and began running experiments on the virtual tissue. This will ideally be the first of many such conferences aimed at bringing together research and industry while providing young students with examples of where careers in science can take them.



High school students Shawn Kozarchuk, Lauren Ellison and Teal Mofynski perusing research posters.



WestLink Invests in Canada's Future



The WestLink Early-Stage Venture Financing Panel. From left to right: Bill Watchorn, President and CEO ENSIS Growth Fund; Grant Kook, President and CEO, Golden Opportunities, Inc.; Randy Thompson, General Partner, Argon Venture Partners; and Mike Volker, Director, Simon Fraser University, Industrial Liaison Office.

Getting technology out of the lab and into the public sector isn't easy. The WestLink Innovation Network aims to change that by building connections between industry, researchers and funding sources.

From June 24 to 26,

WestLink hosted its 2007 annual conference in Winnipeg. Under the theme "Commercialization in Three-Part Harmony: Money, Research and Industry," conference participants had the chance to hear about the status of innovation and opportunities for development in Western Canada from leaders in the field.

The WestLink internship was also profiled, along with successful internship participants.

WestLink interns learn to blend their business and research experience to become skilled technology commercialization specialists. "It would have taken me 10 to 15 years to get the skills and knowledge that I got in two years with the WestLink program," said Divyesh Patel, a WestLink intern currently working with Innovotech.

In addition to learning about the benefits of industry internships, conference attendees heard from speakers on royalty laws and regulations, networking skills, funding opportunities abroad, new technologies, the state and future of education in Canada and much more. NSERC-Prairies was one of many supporters that helped the conference to take place.

Physicists Gather in Saskatchewan

Leading researchers from around the world came to the University of Saskatchewan for the Canadian Association of Physicists (CAP) 2007 Congress. Hosted on the University's 100th anniversary, the conference coincided with the Annual Users' Meeting of Canada's only synchrotron particle accelerator, the Canadian Light Source.

One of the highlights of the Congress was the Herzberg Memorial Public Lecture, delivered by Nobel Prize winner Carl Wieman of the University of British Columbia. Carl Wieman chose to talk about improving science education in schools and universities using improved teaching technology and methods.

The Congress also hosted CAP's seventh annual Physics Teachers' Workshop. The workshop encompassed one full day during the conference and was devoted to lectures relevant to teachers of physics at all levels.

"It was very informative and a great melting pot of knowledge from across the country and beyond," said Dan Mielke, a high school teacher in Carrot River, Alberta. "It gave me an opportunity to interact with brilliant minds. It's always great if teachers can get together and network."

"It was very enjoyable," agreed Brian Wooff, a Swift Current, Saskatchewan, high school teacher, "one of the most

useful ones I have attended in 29 years of teaching. There was a good variety of high school-suitable material and some more modern developments."

The conference also offered a unique opportunity to student researchers, as it hosted a student paper and poster competition session for graduate and undergraduate students, as well as outstanding high school students from across Canada.

NSERC-Prairies helped with the event through a Discretionary Grant Fund award, that was divided among the Herzberg Lecture, the Teachers' Workshop and the Student Paper and Poster Competition.

Top Award Goes to Prairie Group

The 2007 Michael Smith Award for Science Promotion was given to Manitoba's CareerTrek. CareerTrek helps elementary and secondary school students who, because of personal circumstances, would be unlikely to continue on to post-secondary education. The non-profit organization shows students what doors a higher education can open for them. "Young people are not lining up to be involved in science," CareerTrek Executive Director Darrell Cole said after he accepted the award at a ceremony at the University of Manitoba. "But it's not science that's stopping them. It's things like hunger, poverty and other social issues."

Douglas Ruth, Dean of the Faculty of Engineering, spoke at the awards ceremony as well. "We love these kinds of programs. It's very important to attract students who wouldn't normally be interested in engineering. Today it's a great career," Dean Ruth said.

Over 2,750 young people have gone through the program since it began 11 years ago. For 20 Saturdays a year, the students engage in hands-on learning in university and college settings. CareerTrek boasts a retention rate of over 90 per cent each year.



Prairies Host Synergy Awards 2006



NSERC staff at the Synergy Awards 2006. From left to right: Roxanne Belcaen, Colette Beaulne, Karen Payette, Chantal Cheauvet, Sandra Dollin and Marie-Pier Rochon.

The 12th annual NSERC Synergy Awards for Innovation and the NSERC Innovation Challenge Awards were presented to leading researchers and industry professionals this year in Winnipeg. NSERC-Prairies played a critical role in the success of this annual gala, helping to attract investors, innovators, government

figures, and business and industry partners who, when the awards ceremony took place, made up a majority of the attendees.

The Synergy Awards honour achievements resulting from collaboration between academic researchers and industry. Winners this year worked on projects ranging

from induction plasma torches to novel pharmaceutical delivery systems. One of the Synergy Awards went to a Prairies researcher: Paitoon Tontiwachwuthikul of the University of Regina's International Test Centre for Carbon Dioxide Capture (ITC). The ITC develops new ways to decrease carbon dioxide emissions

created by the burning of fossil fuels. All of the projects are expected to have major impacts on future research and industrial applications, and some have made those impacts already.

NSERC's Innovation Challenge Awards are given to outstanding students who have already shown the ability

to transfer the technology they work on into industrial products. This year, winning researchers created a new method of three-dimensional modelling that has a huge range of applications from medical documentation to visual effects in movies and video games, discovered and investigated a new antibacterial strain that is highly effective and can be produced at very low cost, and developed a new gene-inactivation system that could be used to treat illnesses such as Alzheimer's disease and HIV/AIDS.

NSERC's support of the research awards is intended to encourage future projects. "Canada's ongoing prosperity in today's global economy depends on an ongoing flow of new ideas," said Suzanne Fortier, President of NSERC. "Investments in research and innovation have a direct impact on our quality of life."

Alberta Engineering Students Showcase Their Research

The University of Alberta and the University of Calgary engineering programs continued to excel this year, each hosting a major graduate research conference.

From April 30 to May 1, the Schulich School of Engineering at the University of Calgary hosted its fourth annual Graduate Student Research Conference. The event was attended by over 250 people, and students presented more than 155 research projects in many different areas of engineering. Twenty-five of the students judged to have the best presentations brought home cash awards.

Only days later, on May 4, the University of Alberta hosted the iCORE Alberta Electrical and Computer Engineering Graduate Student Research Symposium. In addition to showcasing University of Alberta and University of Calgary researchers, the conference invited leaders from Alberta

industry with the aim of connecting academia and industry. Four University of Alberta students brought home awards.

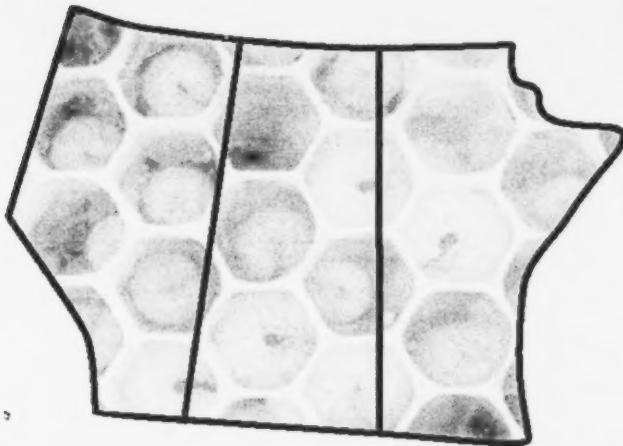
These two large graduate student conferences were prime examples of Prairie universities taking the initiative to develop skills in their students along with the networks necessary for success. NSERC-Prairies was proud to be a partner in these initiatives.



Susan Jensen presents the NSERC poster award to Christopher Blasz, Graeme Dice and Lee Fischer at the University of Alberta.



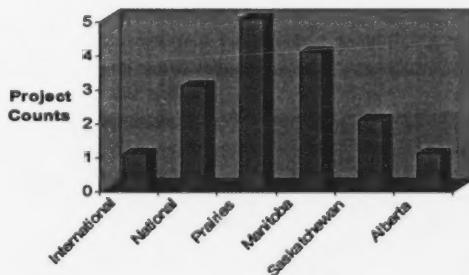
State of the Region Report



Discretionary Grant Fund

An important component of building relationships has been through the deployment of the Discretionary Grant Fund (DGF). These funds are used to support NSERC's mission outside of its current available programming. Fiscal 2006-07 was the first year for the program and almost \$100,000 was deployed. Sixteen projects were funded with the average grant being less than \$6,000. Two principal regional themes of promotion and participation were supported with this fund. The scope of coverage of this fund covered individually each of the three Prairie Provinces, the Prairies as a whole, as well as national or international events.

DGF Scope



Universities – Eligibility

The list of NSERC-eligible universities continues to grow with the recent addition of Concordia University College of Alberta. We take this opportunity to welcome them and wish them every success. The number of NSERC-eligible universities in the region now stands at 11.

Community Colleges

NSERC continues to take steps to expand available programming that enhances college participation. Eligibility over the past year has grown to six Prairie colleges. This year's gains have included Red Deer College. Our scans of the Prairie environment indicate that up to 10 other colleges from across the region may join these ranks in the near- to mid-term.

Tri-agency Intellectual

The tri-agency Intellectual Property Mobilization (IPM) Program has seen considerable growth in the past year. The purpose of this program is to accelerate the transfer of technology and knowledge residing in Canadian universities, hospitals and colleges to the private and public sectors. Under this program the technology transfer costs of the membership are supported. The two key networks in the Prairie region are the Southern Alberta Intellectual Property Network (SAIPN) and the Manitoba IPM Partnership. As a result of this recent activity the IPM Program has now managed to cover the entirety of the Prairies.



State of the Region Report

Natural Sciences and Engineering Enrolment

Enrolments in the natural sciences and engineering (NSE) over the past two years (2005 and 2006) have increased or remained stable across the Prairies. Adding to this recent sampling is that Association of Universities and Colleges of Canada reports that enrolments have increased over the past decade in NSE nationwide.

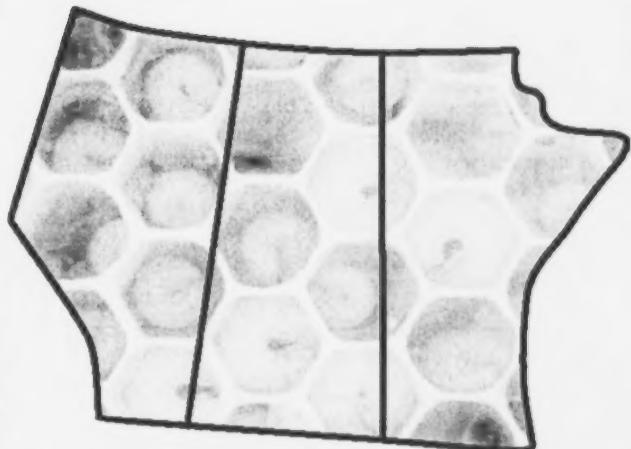
NSE Enrolment:	Fall 2006	Fall 2005	Increase
Undergraduate	39,029	36,925	5.7%
Graduate	6,549	6,316	3.7%

Graduate enrolment data compilation is from the seven reporting universities in the region. Their data shows that over 6,500 graduate (master's and PhD) students are found in the Prairie region. A year-over-year comparison shows that a 3.7 per cent increase is found in enrolments.

University Research Overall

Re\$earch Money reports that Prairie universities performed a total of almost \$970 million in research in 2005, which represents a growth rate of over 10 per cent. All the universities in the region experienced similar growth in research income for 2005. This growth rate is in high contrast to the national growth rate which was reported to be 3.2 per cent for this same period. Achieving the \$1 billion regional milestone in research income is now well within reach.

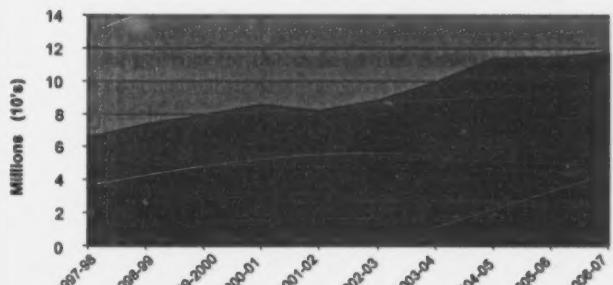
Special mention for the University of Lethbridge is made at this time for rising 28 places to finish in third place as the Undergraduate Research University of the Year. This rise is a combination of several factors which include research income and publication intensity.



NSERC Research Investment

NSERC invested over \$117 million (16 per cent of its total investments) in support towards research in 2006-07, across the Prairies. Growth in support continues from this key source and represents a 2.9 per cent increase from the previous year. Over the past five years NSERC funding has increased by over 33 per cent and has increased by over 80 per cent over the past decade (chart following).

Ten-Year History of NSERC Funding in the Prairies





CRYSTAL Activity Across the Region

The Centres for Research in Youth, Science Teaching and Learning (CRYSTAL) continued to build on past success this year, carrying out major meetings.

The CRYSTAL Program, which began in 2005, is dedicated to improving science and mathematics education in both elementary and secondary schools. Each of the five CRYSTALs across the country (in Alberta, Manitoba, the Atlantic and Pacific provinces, and Sherbrooke) maintains a different emphasis and mandate, but all are dedicated to the goal of helping young Canadians become more involved in science and mathematics.

The Alberta program, housed in the Faculty of Education at the University of Alberta, emphasizes conducting research useful to teachers and those involved in curriculum development. The program also stores validated curriculum plans and disseminates those plans to teachers. It incorporates over a dozen researchers from the Faculty of Education and the Faculty of Science at the University of Alberta, as well as faculty from The King's University College.

CRYSTAL Alberta is involved in research through competitive fellowships and "assistanceships" offered to university students in undergrad, master's and doctoral programs who are working on solving issues in education. Some of the research currently being conducted in the program includes examining ways to adapt primary research for use in elementary and secondary school classrooms, investigating the role of visualization in learning, and building prototypes for personalized learning.

The University of Manitoba's Faculty of Education is home to the Manitoba CRYSTAL. Faculty members from the University of Manitoba, University of Winnipeg, University of Regina and University of Saskatchewan work together toward this CRYSTAL's goal: research on risk factors and positive influences on the students' learning.

Manitoba's CRYSTAL has already completed work on topics such as science teaching in francophone-minority settings, development of science curriculum in northern Aboriginal communities and

influences on teacher development. Two Manitobans, University of Winnipeg Professor Dawn Sutherland and Executive Director of CareerTrek Darrell Cole, have been involved in research concerning the local community's influence on youth science education.



Dawn Sutherland, Canada Research Chair in Indigenous Science Education and CRYSTAL-Manitoba manager.

The CRYSTAL program held two major meetings this year. First, from November 2 to 4, 2006, the First National CRYSTAL Conference was held at the University of Alberta CRYSTAL. Attendees heard from each of the regional

programs and learned about the initiatives being undertaken at each. One of the high points of the conference was the CRYSTAL-PromoScience planning session. This was the first time that the practice-oriented PromoScience representatives have had the chance to officially meet with the more research-oriented CRYSTAL programs, opening the door for future complementary collaboration. The second annual conference will take place September 27 to 29, 2007.

A few months later, the Manitoba Education Research Network and the Manitoba CRYSTAL partnered to host a joint forum at the University of Manitoba. Researchers, high school representatives and government officials met to discuss current developments in science and math education and cutting-edge educational models.

The CRYSTAL programs were initially created with NSERC funding. The advances made by the programs have already proved this investment to be valuable.



Students Learn What Engineers Really Do

This year NSERC-Prairies helped to bring the message of "What Engineers Do" to young Aboriginal students throughout Manitoba.

NSERC-Prairies partnered with MTS, Manitoba Hydro, ACRES/KGS Engineering and the Association of Professional Engineers and Geoscientists of Manitoba to help Randy Herrmann, Director of the Engineering Access Program (ENGAP), to produce an activity book entitled, "What Engineers Do" for distribution to Aboriginal youth.

ENGAP is currently active at the University of Manitoba in encouraging Aboriginal students to become engineers and providing support to students already in the program.

Distributing the activity books will help to encourage and support students at a much younger age.

The activity book, originally published through the Native Access to Engineering Program at Concordia University, invites kids to complete activities related to engineering and also has a strong emphasis on how these activities relate to Aboriginal culture in the past and present.



Prairie Researchers Bring Home Major Awards

Two major NSERC awards were given to researchers from the Prairies this year.

Edgar Steacie, for whom the first award is named, was a leader in research after World War II. A chemist, he believed strongly in the importance of fundamental research and individual contributions to science. The award provides funding for an academic researcher to devote his or her time entirely to research for two years.

One of the six E.W.R. Steacie Memorial Fellowship recipients this year was from a Prairie province. Chemist Jillian Buriak of the University of Alberta was given the award in recognition of her work on interfaces between nanotechnology and the real-world-size machinery that nanotech has to interact with to be useful to us.



The Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering was awarded this year to the University of Manitoba's Time-of-Flight Mass Spectrometry Laboratory.

Back row (left to right): Igor Chernushchikov, Bruce Thomson, Hélène Perreault, Steve Haber, Alexandre Loboda, Harry Duckworth, and Oleg Krokhin. Front row (left to right): John Wilkins, Ken Standing, Mark Whitmore, and Werner Ena.

The second major award is named in honour of Bertram Brockhouse. While working for Atomic Energy of Canada in 1958, Brockhouse developed a neutron spectrometer that allowed scientists to examine the molecular structure of solid matter. In 1962, Brockhouse and his team at McMaster University created an improved version of the technology, which remained in use until the 1990s. The Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering is a \$250,000 award given to researchers who demonstrate the kind of excellence Brockhouse personified.

The award was given in January 2007 to the University of Manitoba's Time-of-Flight Mass Spectrometry Laboratory. The new methods devised by the team allow for improved scanning of cell proteins and have applications in dozens of fields from medicine to textiles. The collaborative project has drawn in University of Manitoba researchers from the fields of physics, chemistry and medicine as well as government research groups in agriculture. The work played an integral role in examining the characteristics of SARS after the 2003 outbreak.

The awarding of two prestigious prizes to Prairie Provinces researchers speaks to the calibre of research and innovation happening in our region.



Jillian Buriak, one of this year's E.W.R. Steacie Memorial Fellowship recipients.

Alberta Science Outreach: Connecting Research and Learning

The Alberta Ingenuity Fund and Alberta Advanced Education and Technology united on January 31 this year to hold the Alberta Science Outreach Workshop.

The workshop was aimed at helping outreach program organizers and promoters to develop science outreach programs that encourage students at all levels to be active participants in science promotion programs. The goals of the workshop were to build networks of communication and cooperation among

organizations promoting science awareness as well as enhancing the existing outreach programs in Alberta.

Ian Allen of the Australian Broadcasting Corporation (ABC) was the event's keynote speaker. He detailed the steps that ABC had taken to promote science in television shows, in radio programs and on the Web. ABC has several popular science-based radio and television programs, and hosts interactive live events for young people centred on science promotion.

Sessions held throughout the day delved into the characteristics of successful science promotion programs, ways to support such programs, and tools and techniques for evaluating their impact and effectiveness.

The success of the Alberta Science Outreach Workshop led NSERC-Pacific to host a BC Science Outreach Workshop based on the Alberta model. NSERC-Prairies is also working on plans to bring a similar workshop to Manitoba and Saskatchewan.



Undergraduates Demonstrate Talents at Four Research Symposia

Recognizing how important it is to involve students in research as early as possible, universities in the Prairie Provinces have been moving forward this year with symposiums aimed at undergraduate researchers and their work.

The University of Manitoba drew in 300 people to the first-ever NSERC Poster Competition for research assistants. More than 50 students from several faculties participated in three categories: Applied Sciences, Biological Sciences and Physical Sciences.

Digvir Jayas, Associate Vice-President of Research at the University of Manitoba, was one of the driving forces behind organizing and carrying out the event. It is hoped that the competition will evolve into an annual happening, and that it will grow to take on a regional emphasis encouraging participation by other universities in the province.

"All the participants did a terrific job of showcasing the high-calibre research being tackled..."

Melanie Martin

The University of Winnipeg also held an undergraduate research conference this year. Twenty-five students from the fields of physics, biology, chemistry, geography and psychology exhibited their work. Just as in a professional competition, posters were judged and prizes were given out. The judges placed particular emphasis on how well the presenters were capable of communicating their research to members of the general public, bringing home the message that in addition to solid scientific skills researchers of today need to be able to communicate their findings in a meaningful way. Many of the University of Winnipeg poster competition winners have already moved on to graduate studies at institutions such as the University of Manitoba, University of Waterloo, University of British Columbia and University of Cambridge.

Melanie Martin, Assistant Professor of Physics at the University of Winnipeg, was responsible for coordinating the competition. "We are all grateful to NSERC for sponsoring the poster contest," Melanie said. "All the participants did a terrific job of showcasing the high-calibre research being tackled by students at the University of Winnipeg. It was an ideal venue for those students to practice presenting before advancing on to scientific conferences."

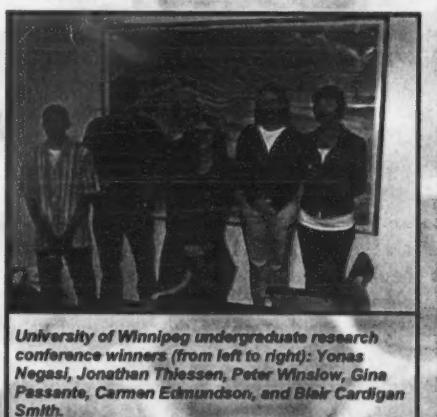
In mid-August of 2006, The University of Saskatchewan and NSERC Rep Chris Soteros together hosted the NSERC Undergraduate Student Research Awards poster competition. Eight of the two dozen participants secured an NSERC Industrial Undergraduate Research Award for their demonstration of exceptional abilities.

"It was an ideal venue for those students to practice presenting before advancing on to scientific conferences."

Melanie Martin

One hundred more young researchers participated in the University of Saskatchewan and the Canadian Society for Chemistry Western Canada Undergraduate Chemistry Conference 2007. In addition to a focus on student posters and presentations, conference organizers invited members of industry to attend, giving students the opportunity to connect with potential future employers.

These four conferences go a long way in encouraging research by undergraduate students at universities in the Prairies. NSERC-Prairies was an active participant and supporter of all of these activities, and with continued support from organizations like NSERC the competitions and conferences available to students will continue to highlight the value of research and the opportunities that exist for students across the region.



University of Winnipeg undergraduate research conference winners (from left to right): Yonas Negasi, Jonathan Thiessen, Peter Winslow, Gina Passante, Carmen Edmundson, and Blair Cardigan Smith.



Dreamcatching for Aboriginal Students

DreamCatching 2007, Professional Development Workshops for Teachers of Aboriginal Students, the fifth conference in the series, was held at the University of Regina this year from May 2 to 5. The not-for-profit organization Mount Pleasant Educational Services was the driving force behind the event, in keeping with its mandate to help Aboriginal youth achieve their goals in education.

School teachers at all levels, school administration officers, education specialists and others involved in the education of Aboriginal students – about 150 attendees in total – gathered to meet Elders and learning specialists from across the continent

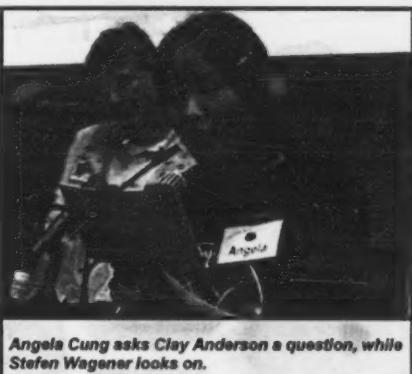


Celina Cata-Matasawagon (left) from the Urban Aboriginal Alternative High School Program, and Florence Ganfield from the University of Saskatchewan at DreamCatching 2007.

and to learn about a range of topics in education. Issues covered included making science and math meaningful to Aboriginal students, integrating technology into the learning environment, investigating characteristics of programs directed toward Aboriginal youth that are succeeding, and educating students about opportunities for careers in science.

NSERC-Prairies provided planning and financial support in organizing the conference and bringing in some of the presenters and facilitators. NSERC-Prairies' supporting grant was an investment in supporting Aboriginal students in education related to the natural sciences, engineering and technology.

High School Students Connect with the Space Station



Angela Cung asks Clay Anderson a question, while Stefen Wagener looks on.

Speaking over amateur radio with astronaut Clay Anderson, students attending the Manitoba Space Adventure Camp made contact with the International Space Station on July 12. The students had a brief window of only 10 minutes to ask questions about life in zero gravity, orbital adjustments and micrometeorite damage.

The event was just one part of the students' work, which included launching high-altitude balloons and building a small satellite that will be sent into space to conduct research designed by the students.

"It just started with a brief idea," said high school student Angela Cung. "It's hard to believe it's actually happening now."

Scott White, another Manitoba high school student, described how the project helped him to gain "new contacts, new skills, and even an amateur radio licence."

Scott was also preparing to receive his amateur rocket certificate, which would allow him to launch rockets of his own design. Initially tapped to help with programming for some of the features of the satellite, Scott discovered fascinating new fields of study, such as astrogeology, through the program.

Angela took the opportunity to ask astronaut Clay Anderson about the potential difficulties of integrating software designed all over the world into the space station. Scott asked if NASA might consider adding a tourist module to the space station to defray the costs of space missions.

"NSERC helps connect people, research and industry," said Guy Levesque, Manager of NSERC-Prairies and an invited speaker at the event. "This might be the longest vertical connection we've ever made." NSERC-Prairies was a "major funder," explained Barb Bowen, Special Programs Manager for the Manitoba Aerospace Human Resources Coordinating Committee.

Stefen Wagener, the organizer of the Space Adventure Camp, explained that by "using aerospace and communications, we have the ability to help students get a grasp of what's up there in terms of science." Stefen hopes that the camp will open doors for students to future careers in aerospace.

D'Arcy Philips, CEO of Manitoba Aerospace, also encouraged the students to continue to work in the aerospace industry. "Although Manitoba has only 4 per cent of Canada's population, we have the third largest aerospace industry in Canada," D'Arcy explained, after listing a dozen careers open to aerospace graduates and the in-province education programs that the students can enroll in to launch those careers.



The students behind the WinCube Satellite Project with a photo of astronaut Clay Anderson in the background.

Science Education: Teachers' Perspectives

Brian Wooff of Swift Current, Saskatchewan, Dan Mielke of Carrot River, Saskatchewan, and Jay Lorenzen of Waneda Composite School were three of the teachers in attendance at the Canadian Association of Physicists 2007 Congress.

Since the Congress was a chance for science educators to learn about new ways of engaging students, one question that comes to mind is: what are the current barriers holding students back from entering the sciences?

"If students can just get past some of the obstacles they see in terms of the math, they would quickly realize the truly intuitive nature of physics as a science," said Dan, commenting on some of the

negative feelings toward math in high schools.

"Math skills seem to be getting weaker," Jay commented. Teachers also face competition for the attention of students from sources inside and outside the school.

"Students can be overwhelmed by the quantity of material in the curriculums," Jay mentioned.

"I find it difficult to find students who have the time in their schedule to go beyond the everyday classroom physics," said Brian. "They're busy in band, sports, working part-time and volunteering – all very important pursuits."

"In the face of [video games] we are almost having to become part-time entertainers," said Dan.

NSERC believes that the engaging teachers workshops, such as the one that Dan, Brian and Jay attended will help to give teachers some of the tools they need to continue to educate the next generation of Canadian scientists.

"I think the responsibility of engaging students in any subject is the responsibility of the teacher," said Dan. "It is our job to share our passion with the students. If a teacher can truly share their passion for their subject, the students will be engaged – it is inevitable."

Preparing for the IBO: The Canadian Biology Olympiad Training Camp

Future biotechnology researchers, nanotechnologists and physicians from around the country gathered at the University of Manitoba this year – and they haven't even left high school yet.

The 2007 Canadian Biology Olympiad Training Camp convened in Winnipeg from May 25 to June 3. Participants learned about biology from professors and graduate student coaches in a university setting.

"It's a chance for them to meet other students from across the province and across Canada who are keen learners and who love biology," said Bob Brown, the coordinator of the training camp. "The week is a packed-in chance to learn. The students really are here for the learning. They can find role models in the coaches and faculty."

Mark Whitmore, the Dean of Science at the University of Manitoba, also stopped by to see the students. Whitmore wasn't concerned that many of the students weren't committed to entering science or medicine yet. "They're engaged in science," Whitmore said. "No matter what field they enter, they're the decision-makers of tomorrow and the more they appreciate science the better. It's important that more people understand science."

Ben Leis, one of the training camp attendees, came to increase his understanding of science. For him, research is the chance for "discovery, and an opportunity to take part in something exciting." Ben was happy to be at the training camp, reporting that it was a chance to "be in an environment with people at the same level who are driven to

excel. And everyone here is a friend with each other already."

Janine Urbano from Sisler High School in Winnipeg was at the training camp to "gain knowledge." "I want to understand more about genetics and diseases," she said. Janine is currently trying to decide between becoming a cardiologist or a marine biologist. "I love animals," Janine said. "They're all so similar and yet so different,

even with all the effects of evolution."

While the training camp was ostensibly competitive, with only four students going on to compete in the International Biology Olympiad, the students didn't emphasize the competitive aspects of the week. Instead, they were just excited to learn about a subject they love alongside other impassioned learners.



Students at the Canadian Biology Olympiad Training Camp laughing and learning.

Saskatoon Hosts the International Biology Olympiad

The brightest high school biology stars from 49 countries across the globe met in Saskatchewan this summer. From July 16 to 22, these students competed in the 18th annual International Biology Olympiad (IBO), this year hosted by the University of Saskatchewan.

From humble beginnings almost two decades ago as a scholastic competition between Czechoslovakia and Poland, the IBO has grown in popularity into a huge global endeavour. This was the first time that the competition has been hosted in North America and only the second time that it has been held in the Western Hemisphere (Argentina hosted the 2006 competition).

The IBO is more than a chance for students to display their academic skills. In many countries, achieving a gold medal in the Biology Olympiad is a key to acceptance at any university, with funding.

Each country sent four students as well as a number of instructors who served as representatives for their countries.

The IBO competition has two parts: a theory component testing students' knowledge of the science of biology, and a practice

component testing their working knowledge of laboratory techniques and procedures.

Three of the members of the Canadian team, Chester Yao, David Wang and Yan Yu, shared their reflections about their week at the IBO.

"It was a very great and enjoyable experience to attend the IBO. I had a lot of fun there and met a lot of new people," said Chester. "I met lots of wonderful people," David added. "The most exciting part of the competition for me was definitely leading the students in giving the official oath. It was a great honour and I was very happy that I got the opportunity to address the entire IBO group." "It's almost impossible to describe my impressions in a few sentences because I was just that impressed," Yan said. "What first struck me was the sheer magnitude and scope of the event."

One of the ways that magnitude was evident was in the diversity of participants: 49 countries each sent four students to the competition. Participants came from as far away as India, Thailand and Iran, to name only a few nations.

"I didn't feel that relationships between students were hindered

in any way, even though they were all from different countries. Most could speak English and those who couldn't were made welcome by the other competitors," David reported. The cultural diversity didn't affect communication for Yan either. "My incomplete French skills certainly came in handy when chatting with Team France, and I was surprised that members of Team Sweden spoke such good English—just as well as native English speakers, in fact," Yan said. "The interactions between students from all over the world was by far the most interesting thing."

The competition itself was a big part of the weekend. "The practical lab exams were a few of the most challenging biology exams," Yan said. "It's interesting how the more you learn about a subject, the harder it is to be more specific." "I didn't socialize as much as I wanted before [the competition] because I was more intent on studying," David said.

Students spent some time building friendships on a camping trip as well. "We got a chance to learn a great deal about Canada's history while having fun with newly made friends," David said of the camping trip. Yan said: "The excursions and other breaks from

biology work, such as our trip to Wanuskewin, were also unforgettable – first time I slept in a tipi!"

The weekend left positive impressions on all four Canadian team members, three of whom are moving forward with their education and looking at medical careers.

"The IBO was the time of my life," said Yan. "Although it was cool to receive a medal, the many new friends I made was what made the IBO such an unforgettable once-in-a-lifetime experience for me." Yan is going to be attending Queen's University for his undergraduate studies. He hopes to stay in Canada for his medical training and plans to become a neurosurgeon, noting "Canadian universities are awesome and I'm happy to continue my education in this great country." Yan ended the competition as Canada's top-scoring participant, earning a silver medal and coming in 31st place

out of nearly 200 competitors.

Chester finished in 44th place, also earning a silver medal. Chester is leaning toward the medical sciences and studies at the University of Toronto, but has not decided yet exactly what profession to enter. A research career in biochemistry, pathology or oncology may be in the cards.

David won a bronze medal for Canada and has already been accepted to undergraduate studies at Princeton University. He is considering becoming an immunology and infectious disease researcher, but is open to other options. "I will not forget Canada," David said. "I hope to come back for medical school. Many countries do not really support their competitors; we greatly appreciate NSERC's help and encouragement."

Canada's Boken Lin also brought home a bronze medal for Canada.



IBO Team Canada (left to right): David Wang, Yan Yu, Chester Yao, and Boken Lin.

Regional Innovation Systems: The Prairies Stakeholder Map Project

The NSERC-Prairies regional office interacts with a great diversity of clients, who have different interests, needs and expectations from NSERC. In our office, we do this across three provinces that operate under different socio-economic conditions, each with its own distinct needs and challenges. Each day, we strive to develop a deeper and broader understanding of (1) the different actors in regional innovation systems, or the stakeholders; (2) the regional sensitivities, challenges and needs; and (3) the wide range of regional initiatives and strategies.

During our strategic planning exercise, carried out in March with the help of our advisory committee, the Prairies stakeholder map project was identified as a top priority for our office. The stakeholder map project is both a process

and a tool that will allow us to develop a deeper and broader understanding of the region so we can effectively deliver on our mandate, as well as identify the areas where we can add value and make a difference.

The stakeholder map is a living, evolving project and will be many things to many people. It is:

- a process to help us engage different stakeholders so they get to know of, or become more aware of, NSERC and NSERC-Prairies;
- a visual map identifying all of the stakeholders that interact with NSERC-Prairies;
- a tool to characterize the nature of those interactions between NSERC and its stakeholders;

- a flexible and configurable database to allow us to reach and communicate with specific target groups quickly;
- a tool to identify connections between different stakeholders; and
- a tool to help us better plan and manage our travels and events.

In the end, the stakeholder map will be the tool to enable NSERC-Prairies to become the experts on regional innovation systems, allowing us to better serve our research community. We welcome your thoughts and suggestions on how you can contribute to the success of this project.

NRC-NSERC-BDC Initiative

As described in the new federal S&T strategy, the National Research Council Canada (NRC), Natural Sciences and Engineering Research Council of Canada (NSERC) and Business Development Bank of Canada (BDC) have begun working on a joint strategy to accelerate the commercialization of publicly funded research that builds upon the individual strengths and complementarity of these organizations. The initiative will see

increased cooperation and a closer alignment of activities among the three organizations.

Led by the NRC, the initiative will be overseen by a steering committee composed of senior officials from the three organizations. Regionally, five hub committees, one of which will operate out of Winnipeg, will take the lead on

informing stakeholders about the initiative, identifying opportunities for collaboration, and connecting people and organizations to support and stimulate technology transfer and commercialization activities. The Winnipeg-based hub committee, chaired by Joan Barichello, Executive Director of NRC-IRAP West, will hold its first meeting in the fall. Guy Levesque, Manager of the NSERC-Prairies office, sits on this committee.

New Federal Government Science and Technology Strategy

On May 17, the Government of Canada released its new science and technology strategy, Mobilizing Science and Technology to Canada's Advantage, to strengthen Canada's economy and improve the quality of life of Canadians. NSERC, along with CIHR and SSHRC are committed to strengthening the efforts to address the knowledge, people, and

entrepreneurial advantages identified in the new strategy. As a result of new funding committed in the federal Budget 2007 and the initiatives described in the new strategy, NSERC will receive an additional \$37 million per year to be spent in the priority areas of energy, environment, and information and communications technologies.

We are increasing funding in the Strategic Projects and Strategic Networks competitions in these priority areas, as well as developing new mechanisms to ensure impact in these areas – including a special Strategic Project competition, funding to the networks for enhanced student training and international linkages, additional Discovery

Accelerator Supplements, and a nanotechnology initiative jointly with the National Research Council Canada and the Business Development Bank of Canada. In addition, NSERC's College and Community Innovation Pilot Program has become a permanent program, covering the domains of all three granting agencies.

Colleges and NSERC: Developing Research Capacity

With six colleges already eligible to apply to NSERC programs,* and another eight pursuing NSERC eligibility, momentum in the region is building. Colleges are securing their place in the innovation system, all the while recognizing that developing their research capacity is a process that requires time, effort and commitment. Olds College in Alberta and Red River College of Applied Arts, Science and Technology in Manitoba are among the colleges that have built a successful applied research enterprise. These two institutions were among a select group of six colleges from across the country to receive funding under the College and Community Innovation Pilot Program (CCIP) in 2004. With the announcement in the federal Budget 2007 and in the new science and technology strategy (*Mobilizing Science and Technology to Canada's Advantage*) that the CCIP Program is now permanent, and with up to 25 additional awards to be made under this program, interest in NSERC programs and opportunities for colleges is growing.

In May, the NSERC-Prairies Manager paid a visit to the Vermilion campus of Lakeland College, east of Edmonton along

the Alberta-Saskatchewan border. Discussions about NSERC programs and strategies on developing research capacity were on the agenda. Lakeland College has small but growing research programs in agricultural sciences and environmental sciences. Dean Mel Mathison, who is championing Lakeland College's efforts to grow their research capacity, stated that "these are exciting times as we develop this area of our College further." NSERC-Prairies staff are committed to working closely with the colleges in their effort to develop a strong research capacity and solid linkages to local and regional academic and industrial partners.

* Colleges are eligible to apply as principal applicants to the Idea to Innovation (I2I) Program and to the College and Community Innovation Program (CCIP), and as co-applicants on a number of other NSERC programs such as the Collaborative Research and Development (CRD) Grants and Strategic Project Grants (SPG).

Western Canadian Research Administrators Meet in Moose Jaw



The 2006 Canadian Association of University Research Administrators (CAURA) West Regional Conference, hosted by the University of Regina, brought together approximately 100 research administrators to improve and build-upon the efficiency and effectiveness of research administration at post-secondary institutions, hospitals and other research institutes, and to foster co-operation and links with other organizations active in the management and administration of research. This two-day conference offered both informative and interactive sessions that governed a spectrum of research topics, including research ethics, financial audits, contract agreements and grant facilitation. The 2007 CAURA West Regional Conference will be held by Royal Roads University from November 16 to 18, 2007, in Victoria, British Columbia. NSERC-Prairies will again be in attendance at this annual meeting.

Two events will coincide with this year's CAURA West Regional Conference: a Research Communicators Workshop and a professional development day on project management. NSERC-Pacific, NSERC-Prairies and Royal Roads University will be hosting the Research Communicators Workshop. Anyone who is involved in communicating research to the public or the media will want to attend this one-day session. The workshop is taking place on Thursday, November 15, 2007 at Royal Roads University.

For further information please contact the NSERC-Prairies office at the following e-mail address: nserc-prairies@nserc.ca. The Project Management Workshop will take place on Friday, November 16 and is hosted by CAURA West. Registration for both of these events can be completed through the CAURA West Regional Conference registration package.

"We appreciate the commitment to the program from NSERC. If it wasn't for the 2003 award, CareerTrek would not be in existence."

Darrell Cole
Executive Director of
CareerTrek

"I would like to thank you guys for being one of the main sponsors of the IBO. Without people like you to fund everything, this event would not have occurred. Thanks!"

Yan Yu
International Biology Olympiad competitor

"We are all very grateful to NSERC for sponsoring the poster contest. All the participants did a terrific job of showcasing the high-calibre research being tackled by students at the University of Winnipeg. It was an ideal venue for those students to practice their work before advancing on to scientific conferences."

Melanie Martin
on the University of Winnipeg Undergraduate Poster Session

"Very informative and a great melting pot of knowledge from across the country and beyond. It gave me an opportunity to interact with brilliant minds."

Dan Mielke
High school teacher,
on the CAP 2007 Congress
Physics Teachers' Workshop

"I feel that the training I received by working with a team of experienced journalists as the NSERC/University of Saskatchewan Research Communications Intern will benefit me well into the future. With this advancement to my skills, I can continue on in the field of science journalism, an area of the media that is underserved."

Angela Hill
University of Saskatchewan
Research Communications Intern

"This is an exciting event. We get funding for Space Camp through NSERC and we're happy to have them as a major funder."

Barb Bowen
Manitoba Aerospace Human
Resources Coordinating
Committee Special Programs
Manager, on the WinCube
Satellite Project

"Manitoba Hydro and NSERC working together really made this event possible."

Aline Tobet
MITACS conference

"As our internship program has expanded across Canada MITACS has benefited greatly from NSERC support. As an example, our Prairie province initiatives have grown through our close relationship with NSERC-Prairies. In addition to funding support, their knowledge of the region and cooperation have opened many doors and helped create success."

Arvind Gupta
Scientific Director and CEO of
MITACS

"I know I speak on behalf of all the Canadian IBO students when I say that we greatly appreciate NSERC's help and encouragement."

David Wang
International Biology Olympiad competitor



NSERC
CRSNG
PRAIRIES

NSERC-Prairies
435 Ellice Avenue, Room 430
Winnipeg, Manitoba
R3B 1Y6

Phone: 204-984-6462
E-mail: nserc-prairies@nserc.ca

http://www.nserc.gc.ca/about/reg_offices_e.asp

"We appreciate the commitment to the program from NSERC. If it wasn't for the 2003 award, CareerTrek would not be in existence."

Darrell Cole
Executive Director of
CareerTrek

"I would like to thank you guys for being one of the main sponsors of the IBO. Without people like you to fund everything, this event would not have occurred. Thanks!"

Yan Yu
International Biology Olympiad
competitor

"We are all very grateful to NSERC for sponsoring the poster contest. All the participants did a terrific job of showcasing the high-calibre research being tackled by students at the University of Winnipeg. It was an ideal venue for those students to practice their work before advancing on to scientific conferences."

Melanie Martin
on the University of Winnipeg
Undergraduate Poster Session

"Very informative and a great melting pot of knowledge from across the country and beyond. It gave me an opportunity to interact with brilliant minds."

Dan Mielke
High school teacher,
on the CAP 2007 Congress
Physics Teachers' Workshop

"I feel that the training I received by working with a team of experienced journalists as the NSERC/University of Saskatchewan Research Communications Intern will benefit me well into the future. With this advancement to my skills, I can continue on in the field of science journalism, an area of the media that is under-served."

Angela Hill
University of Saskatchewan
Research Communications Intern

"This is an exciting event. We get funding for Space Camp through NSERC and we're happy to have them as a major funder."

Barb Bowen
Manitoba Aerospace Human
Resources Coordinating
Committee Special Programs
Manager, on the WinCube
Satellite Project

"Manitoba Hydro and NSERC working together really made this event possible."

Aline Tobet
MITACS conference

"As our internship program has expanded across Canada MITACS has benefited greatly from NSERC support. As an example, our Prairie province initiatives have grown through our close relationship with NSERC-Prairies. In addition to funding support, their knowledge of the region and cooperation have opened many doors and helped create success."

Arvind Gupta
Scientific Director and CEO of
MITACS

"I know I speak on behalf of all the Canadian IBO students when I say that we greatly appreciate NSERC's help and encouragement."

David Wang
International Biology Olympiad
competitor



**NSERC
CRSNG**
PRAIRIES

NSERC-Prairies
435 Ellice Avenue, Room 430
Winnipeg, Manitoba
R3B 1Y6

Phone: 204-984-6462
E-mail: nserc-prairies@nserc.ca

http://www.nserc.gc.ca/about/reg_offices_e.asp